(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
2 June 2005 (02.06.2005)

PCT

(10) International Publication Number
WO 2005/050557 A2

(51) International Patent Classification[7]: G06T

(21) International Application Number:
PCT/IL2004/001069

(22) International Filing Date:
19 November 2004 (19.11.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

60/523,084	19 November 2003 (19.11.2003)	US
60/523,102	19 November 2003 (19.11.2003)	US

(71) Applicant *(for all designated States except US)*: **LUCID INFORMATION TECHNOLOGY LTD.** [IL/IL]; 6 HaChilazon Street, 52522 Ramat Gan (IL).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **BAKALASH, Reuven** [IL/IL]; 20 Hess Street, 76855 Shdema (IL). **REMEZ, Offir** [IL/IL]; 4 Ben Zvi Street, 45373 Hod HaSharon (IL). **BAR-OR, Gigy** [IL/IL]; 37 Dragot Street, 44864 Kochav Yair (IL). **FOGEL, Efi** [IL/IL]; 18 Nachlat Itzhak Street, 67448 Tel Aviv (IL). **SHAHAM, Amir** [IL/IL]; 10/35 HaRimon Street, 54403 Givat Shmuel (IL).

(74) Agent: **LUZZATTO, Kfir**; P.O. 5352, 84152 Beer-Sheva (IL).

(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— *without international search report and to be republished upon receipt of that report*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

WO 2005/050557 A2

(54) Title: METHOD AND SYSTEM FOR MULTIPLE 3-D GRAPHIC PIPELINE OVER A PC BUS

(57) Abstract: Method and system for improving the parallelization of image processing, using one or more parallelization modes, wherein the image that is displayed on at least one computer screen by one or more Graphic Processing Units. Software applications are provided for issuing graphic command and graphic libraries are provided for storing data used to implement the graphic commands. A Software Hub Drivers is provided for controlling a Hardware Hub, for interacting with the operation system of the computer and the graphic libraries, for performing real-time analysis of a data stream, from which frames of the image are generated, for determining the parallelization mode of each GPU, and for forwarding the data stream or a portion thereof to each GPU. GPU Drivers are provided for allowing the GPUs to interact with the graphic libraries and an I/O module is provided for interconnecting between the Software module and the Hardware Hub. graphic commands and the data stream or a portion thereof are distributed between the GPUs for each frame by the Hardware Hub, according to their relative complexity within the image, wherein the complexity is defined by the Software Hub Driver. The Software Hub Driver also composites a graphics output for display, using the outputs obtained from at least one GPU, while alternating, whenever required, the parallelization mode for the each frame.